Dark Galaxy Detected

***Objective*: Validate a new method for detecting undiscovered galactic entities by analysis of their gravitational imprint**

***Implications*: First discovery of a dark companion to our Milky Way galaxy.**

***Accomplishments:* Simulated the tidal interaction between two galaxies using GADGET-2 (an "N-body" code to model gravitation) and smooth particle hydrodynamics to model a gas.**

- **Analysis of cold gas ripples on galactic outskirts suggests mass and location of neighboring satellites.**
- **New method to detect dark matter.**

- ***NERSC:* Key visualization support; NERSC Global Filesystem support.**

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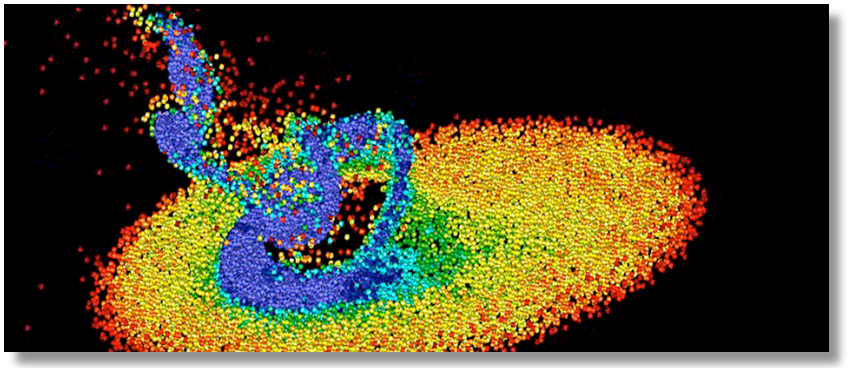

Results from a simulation using the new method to show how the Whirlpool Galaxy M51 interacts with its known satellite galaxy. The new method is expected to have broad implications for astronomy and astrophysics.

The Astrophysical Journal, 731:40 (9pp), 2011 April 10

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